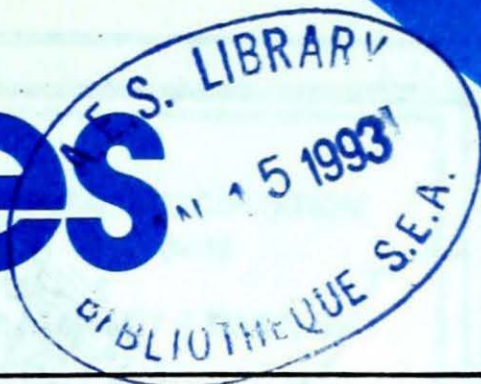




Climatic Perspectives



Jan 4 to Jan 10 1993

A weekly review of Canadian climate and water

Vol. 15 No. 02

Western Canada... Arctic chill continues

"In with the new and out with the old". Even though the new year brought in a slight temperature reprieve for residents of western Canada, the influence of a persistent Arctic air mass continued to be felt as near record low temperatures were recorded. In contrast however, a milder Pacific air mass infiltrated the higher latitudes of the western Arctic, providing a pleasant change from the usual barrage of bitterly cold weather.

In British Columbia a persistent cold spell, along with much ice and snow, forced some logging operations to shut down. On the lower Fraser River logs iced-up and operations generally slowed down. Sub-freezing temperatures persisted since Christmas Day. Southern parts of the interior, such as Kamloops, have reported temperatures of -2°C almost every day. In addition, Vancouver has had measurable snow on the ground for 14 consecutive days - their fifth longest stretch on record. Even balmy Victoria did not escape the cold temperatures, as snow cover persisted into its third week. To the delight of many, the local ponds froze over making outdoor skating events a big hit. Not so popular however, with many home owners, was the high incidence of frozen water pipes. These were insufficiently protected from nighttime temperatures near -7.4°C . Needless to say, wood piles were depleted at a rapid rate.

In the coastal valleys, outflow winds of Arctic air produced clear blue skies but the cold air and strong winds generated dangerous wind chills of -50°C . In the interior, these strong winds helped set off avalanches, closing some passes. In the valley horticultural districts there was considerable stress on fruit trees from deep freeze.

On the Prairies, an Arctic high pressure ridge dominated the weather. Light snowfalls were reported at the end of the period as the cold air re-established itself, causing minimum temperatures to drop as low as -37°C at Edmonton.

Warm in the Northwest

A record warm Pacific air mass penetrated into the Yukon and Mackenzie Valley region, and the mercury climbed above zero. Although the warmth was welcome, residents in some communities became concerned about food supplies stored in unrefrigerated buildings. The warm weather was accompanied by strong southwest winds and blowing and drifting snow which forced the closure of some roads.

Rain drenches Ontario and Quebec

A storm, emerging from the American southwest, brought heavy rain across southern and south-central Ontario on January 4. Accompanying this storm, record warm temperatures pushed the mercury up to 12.2°C at Toronto. Many local creeks and streams overflowed as rainfall, totalling 50 mm, could not be soaked into the frozen or already saturated ground. This was of particular concern in the

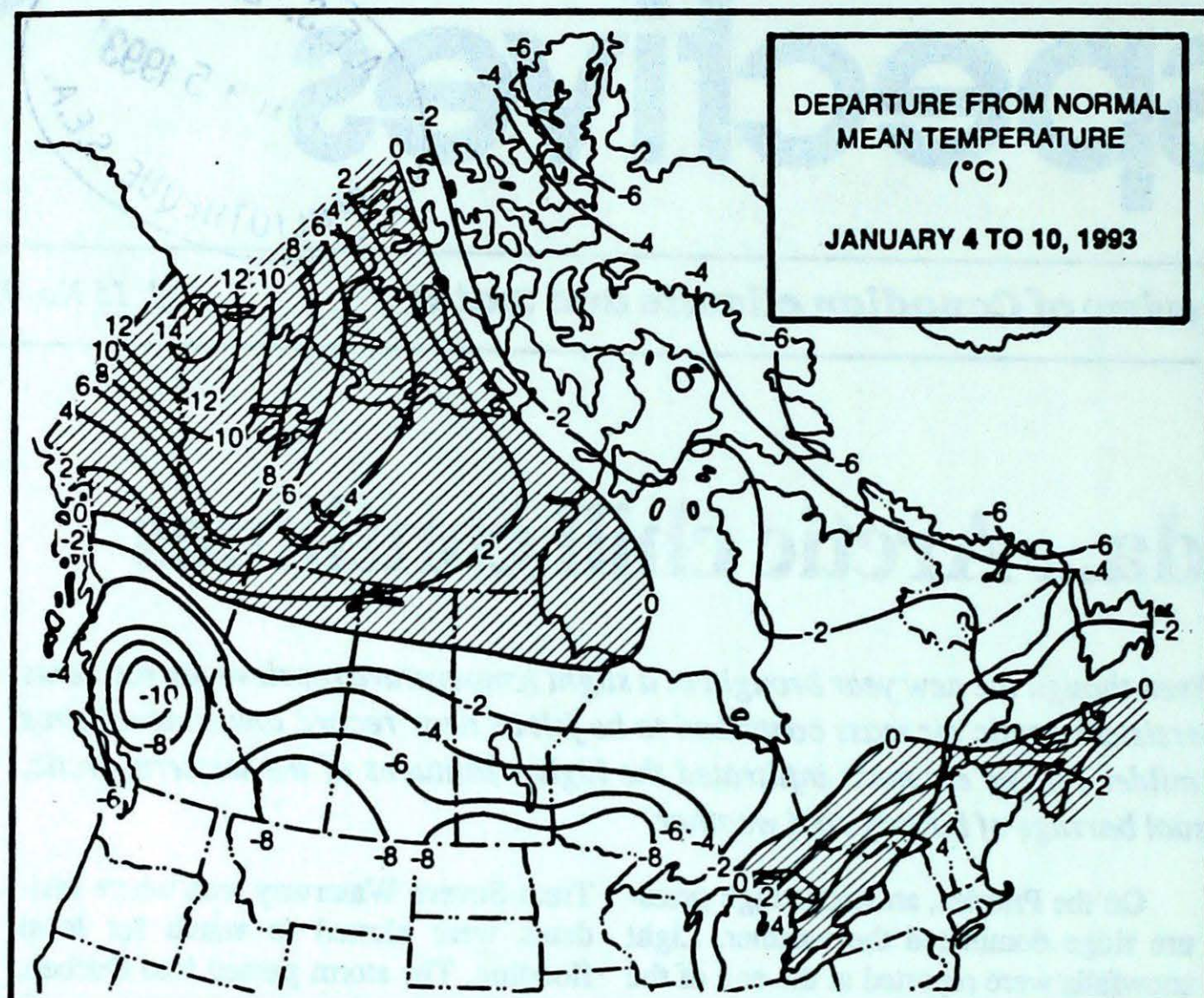
Trent-Severn Waterway area where residents were alerted to watch for local flooding. The storm passed into Quebec, producing record warm temperatures and rainfalls of up to 55 mm in the St. Lawrence Valley. This caused some unexpected ice break-up and jamming, prompting some hasty evacuations.

Unusual iceberg sighting

Over the Christmas holidays, a large, two pinnacle iceberg was sighted drifting eastwards across the mouth of Conception Bay, Nfld. The iceberg's mass was estimated between one to two million tonnes. There were at least two other sightings of icebergs last month. Although iceberg sightings in the late spring and early summer are not unusual local residents can not recall ever seeing icebergs at this time of year. The origin of the iceberg is probably from the northwest coast of Greenland.

A look ahead...

For the week of January 18, above-normal temperatures are expected across Ontario and the western half of Quebec. Elsewhere below-normal temperatures will prevail.



**Weekly normal
temperatures (°C)**

	max.	min.
Whitehorse A	-17.8	-26.1
Iqaluit A	-21.3	-29.4
Yellowknife A	-25.0	-33.0
Vancouver Int'l A	4.9	-0.6
Victoria Int'l A	5.7	-0.2
Calgary Int'l A	-7.4	-18.6
Edmonton Int'l A	-13.2	-23.8
Regina A	-12.9	-23.8
Saskatoon A	-14.7	-24.8
Winnipeg Int'l A	-14.5	-24.1
Ottawa Int'l A	-6.8	-15.6
Toronto (Pearson Int'l A)	-2.8	-10.8
Montréal Int'l A	-6.3	-14.9
Québec A	-8.1	-17.0
Fredericton A	-4.7	-14.5
Saint John A	-3.2	-12.8
Halifax (Shearwater)	-0.3	-8.1
Charlottetown A	-3.4	-10.8
Goose A	-12.4	-21.0
St John's A	-0.3	-6.6

Weekly temperature and precipitation extremes

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Comox A 5	Puntzi Mountain (aut) -42	Fort Nelson A 13
	Sandspit A 5		
Yukon Territory	Komakuk Beach A 2	Watson Lake A -37	Shingle Point A 12
Northwest Territories	Inuvik A 3	Shepherd Bay A -47	Norman Wells A 17
Alberta	Edson A 0	Cold Lake A -39	Lethbridge A 5
Saskatchewan	Eastend Cypress (aut) -11	Nipawin A -42	Meadow Lake A 2
Manitoba	Churchill A -7	Thompson A -44	Churchill A 2
Ontario	Port Weller (aut) 12	Armstrong (aut) -42	Windsor A 59
	Toronto Int'l A 12		
Quebec	Sherbrooke A 9	Parent (aut) -41	Montréal Int'l A 57
New Brunswick	Fredericton A 12	St-Léonard A -32	Saint John A 49
Nova Scotia	Greenwood A 15	Amherst (aut) -19	Greenwood A 29
Prince Edward Island	Charlottetown A 9	Charlottetown A -19	Charlottetown A 34
Newfoundland	St John's A 11	Churchill Falls A -36	Stephenville A 50

Across The Country...

Highest Mean Temperature	Port Weller (Ont.)	1
Lowest Mean Temperature	Eureka (N.W.T.)	-43

CLIMATIC PERSPECTIVES
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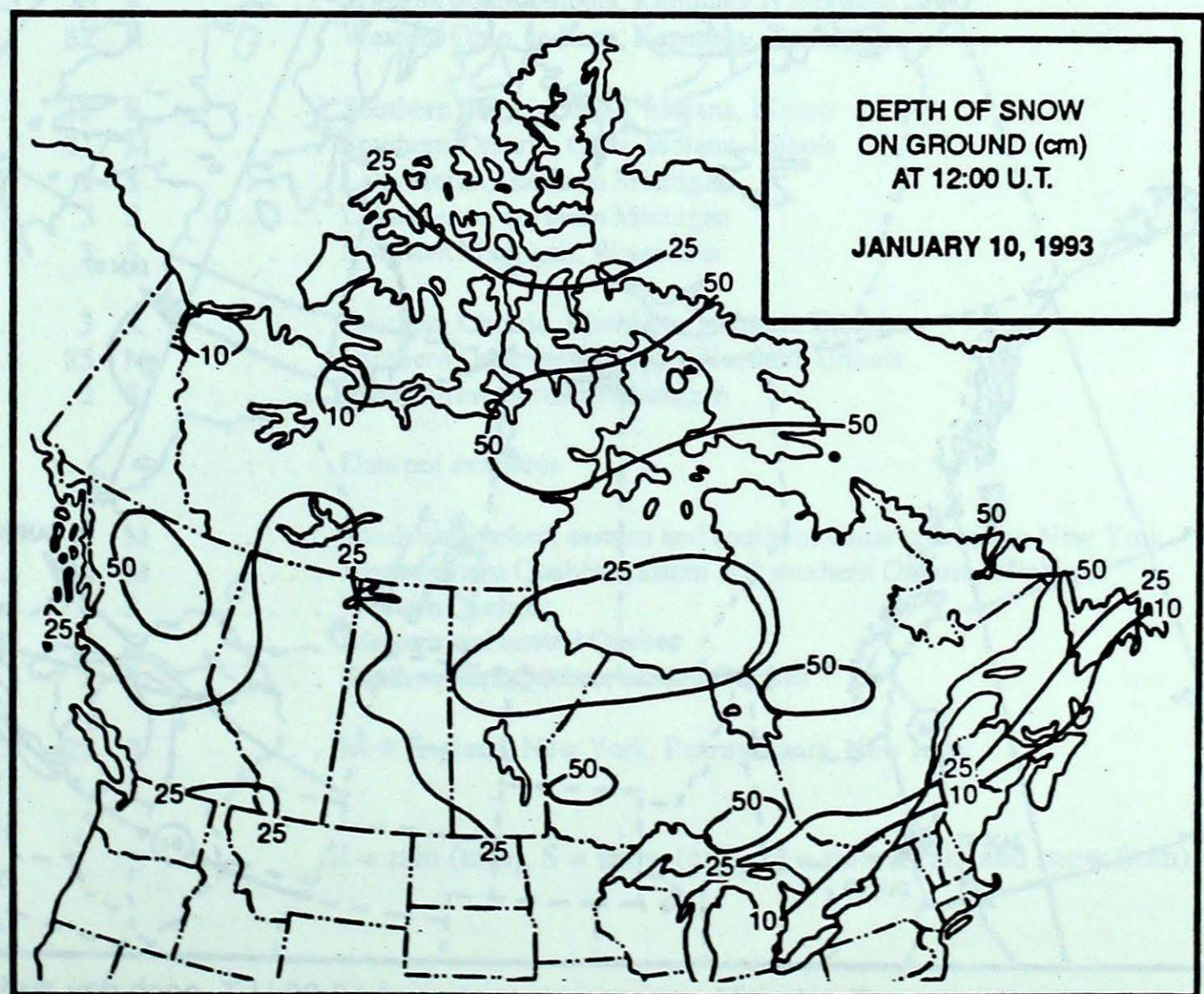
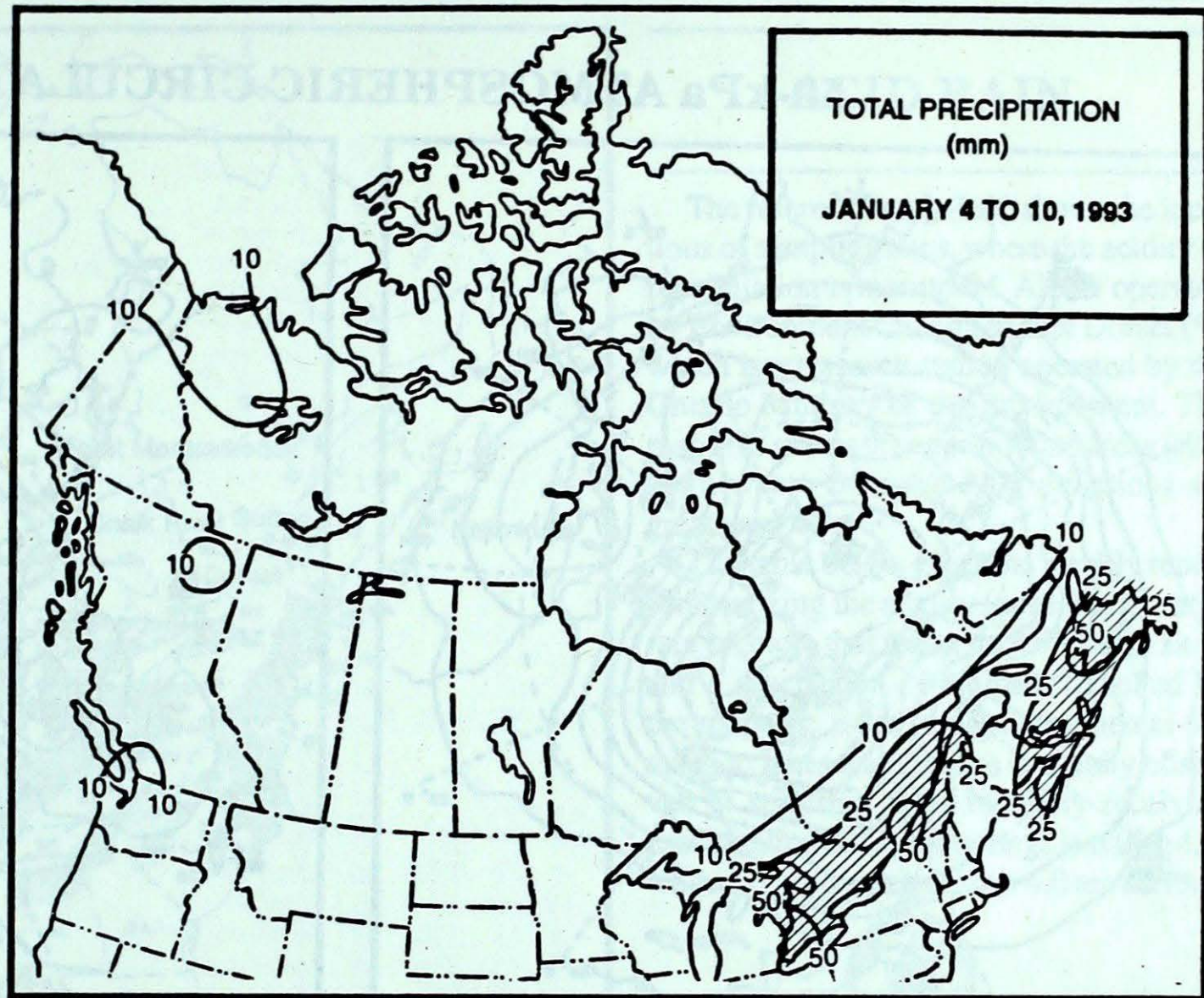
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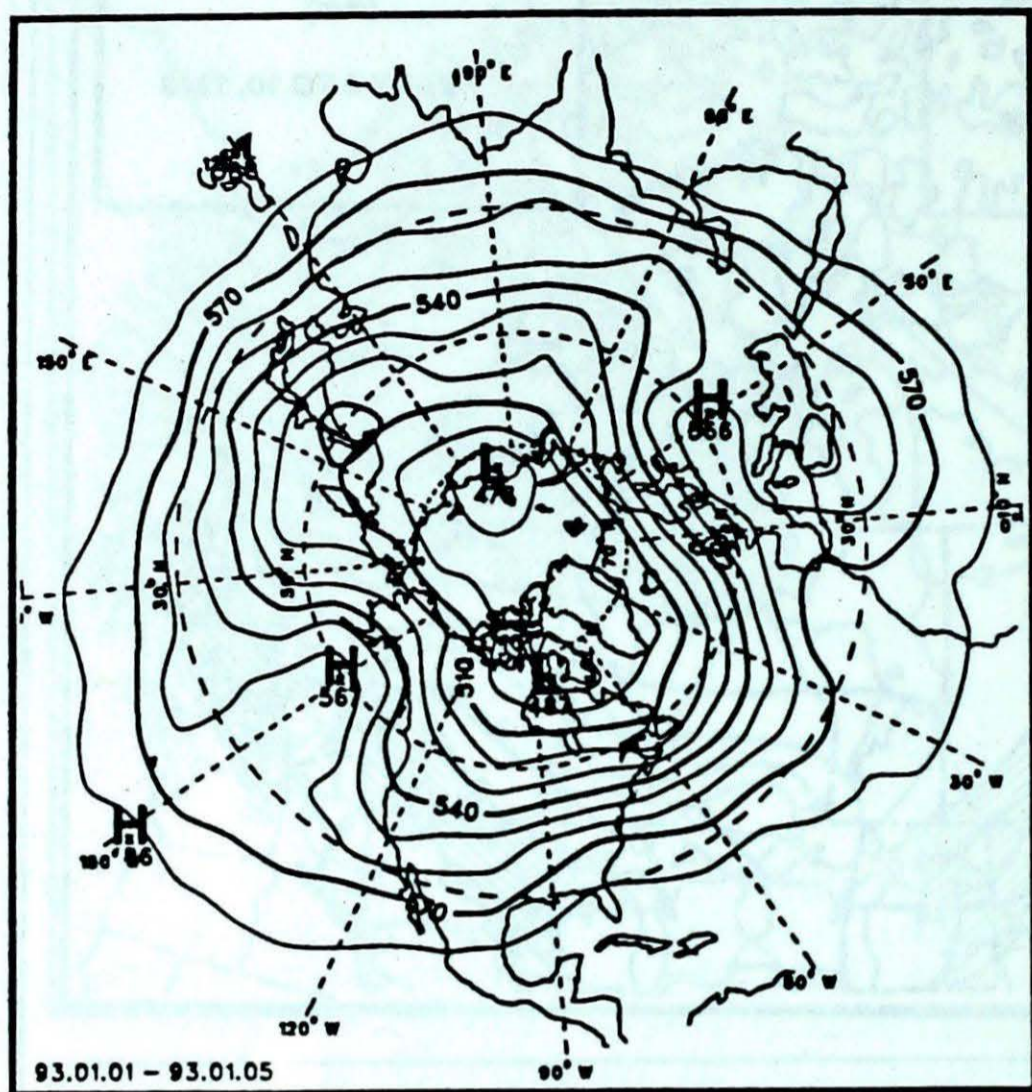
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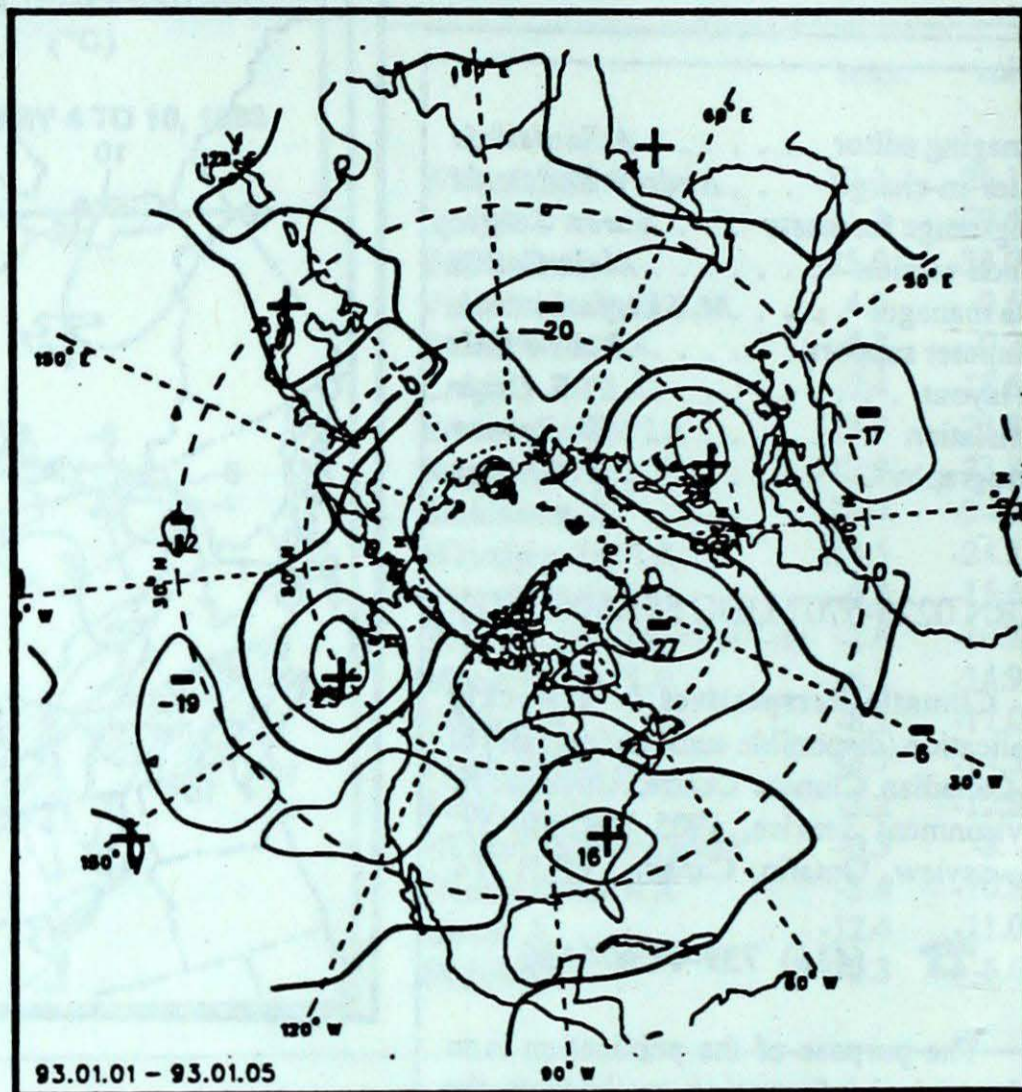
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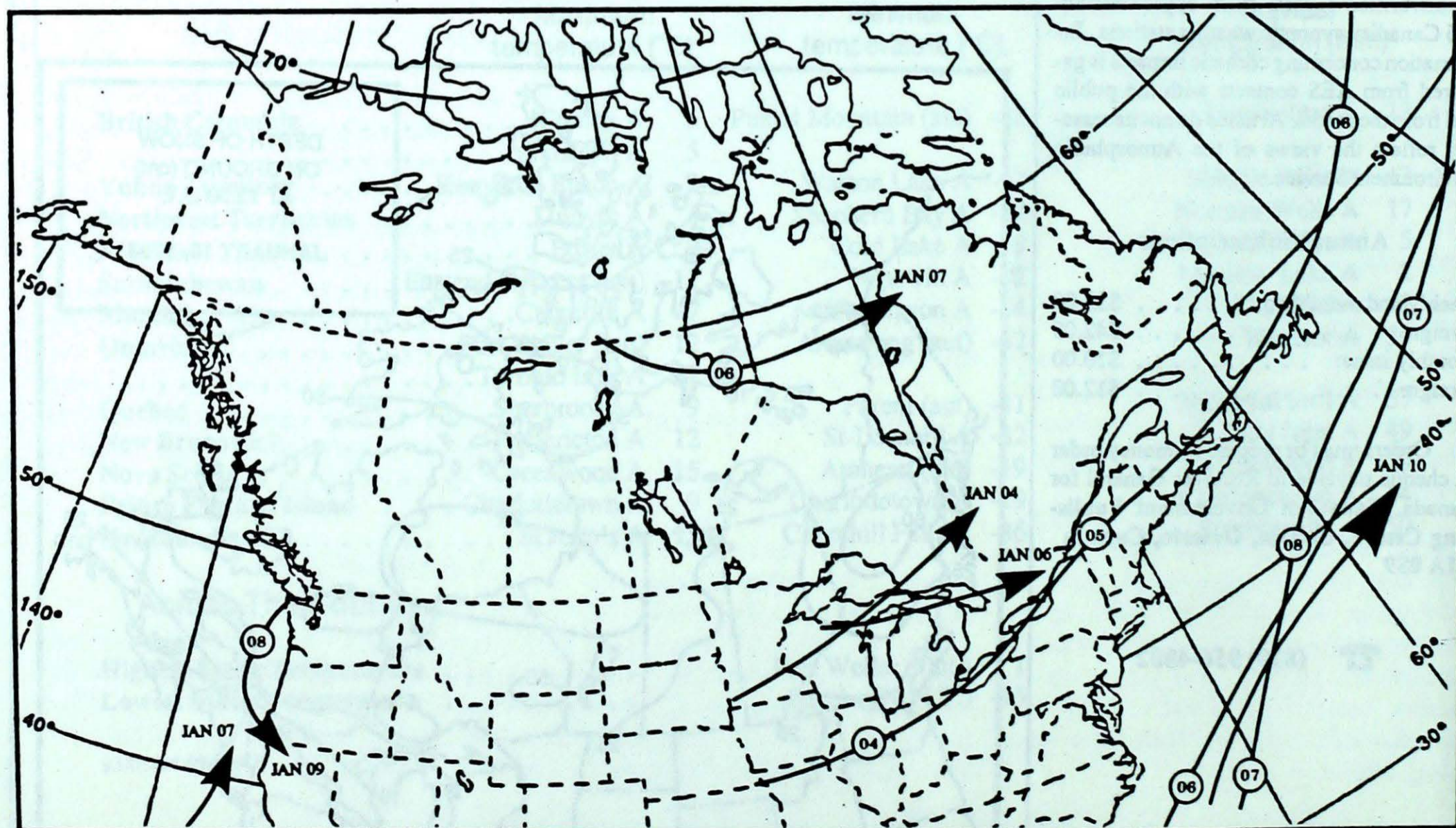
50-kPa ATMOSPHERIC CIRCULATION



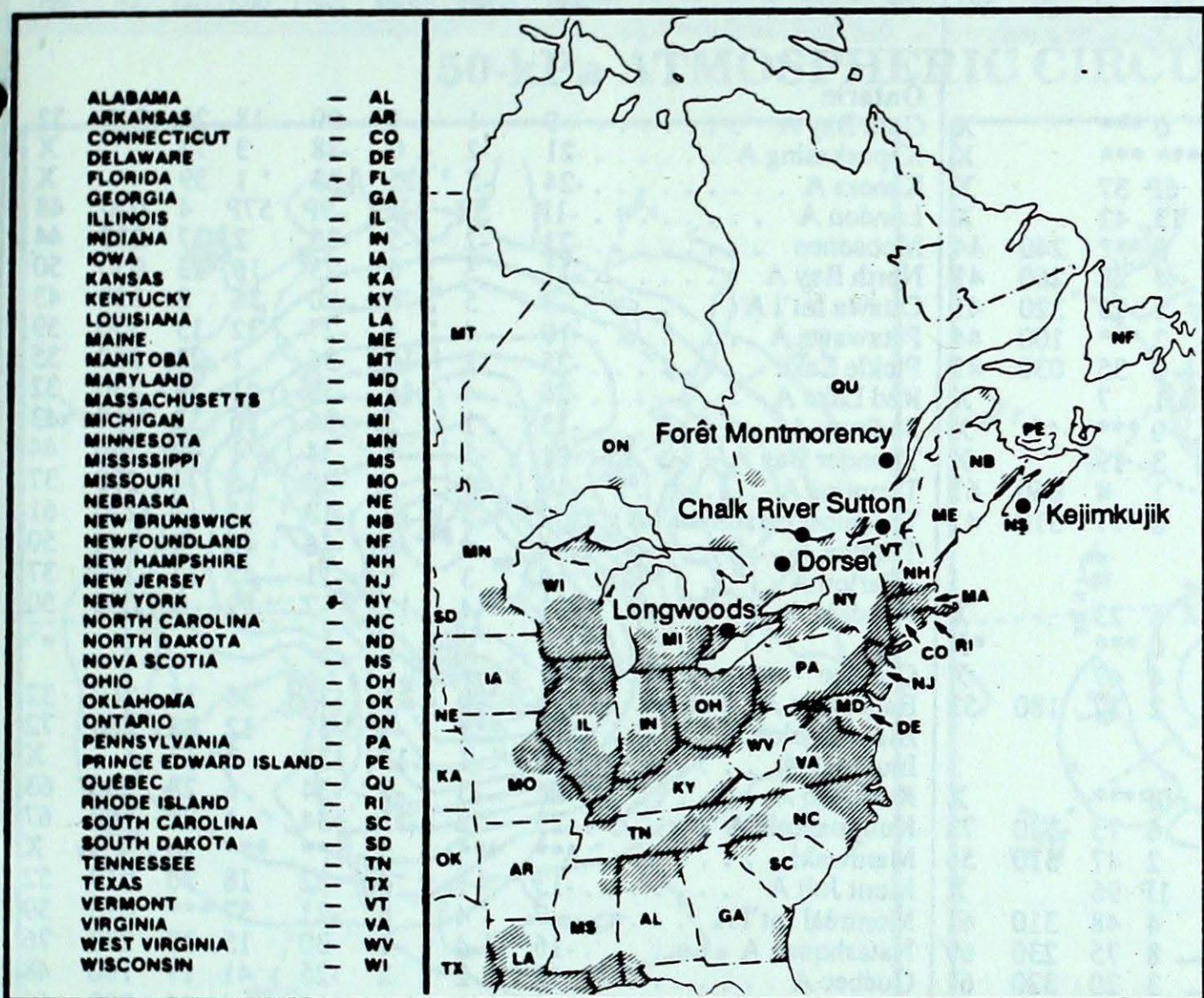
Mean geopotential height
50-kPa level (10 decametre intervals)



Mean geopotential height anomaly
50-kPa level (10 decametre intervals)



Tracks of low pressure centres at 12:00 U.T. each day during the period.



ACID RAIN

The reference map (left) shows the locations of sampling sites, where the acidity of precipitation is monitored. All are operated by Environment Canada except Dorset (*), which is a research station operated by the Ontario Ministry of the Environment. The map also shows the approximate areas (shaded), where SO₂ and NO_x emissions are greatest.

The table below gives the weekly report summarizing the acidity (or pH) of the acid rain or snow that fell at the collection sites, and a description of the path travelled by the moisture laden air. Environmental damage to lakes and streams is usually observed in sensitive areas regularly receiving precipitation with pH readings less than 4.7, while pH readings less than 4.0 are serious.



SITE	day	pH	amount	AIR PATH TO SITE
------	-----	----	--------	------------------

January 3 to 9, 1993

Longwoods	03	4.3	20 R	..... Western Ohio, Indiana, Kentucky, Tennessee
	04	4.7	32 R	..... Western Ohio, Indiana, Kentucky, Tennessee
Dorset *	03	4.3	15 R	..... Southern Ontario, Ohio, Indiana, Illinois
	04	4.7	31 M	..... Southern Ontario, Ohio, Indiana, Illinois
	05	4.7	1 S	..... Lake Huron, northern Michigan
	06	4.5	3 S	..... Lake Huron, northern Michigan
	07	4.5	3 S	..... Northern Michigan, Wisconsin
Chalk River	03	4.1	3 R	..... Southern Ontario, Michigan, northern Illinois
	04	4.6	25 M	..... Southern Ontario, Michigan, Northern Illinois
	07	4.4	2 S	..... Lake Huron, northern Michigan
Sutton				..... Data not available
Montmorency	03	4.7	9 M	..... Southern Quebec, eastern and southern Ontario, western New York
	04	4.8	34 M	..... Southwestern Quebec, eastern and southern Ontario, Michigan
	05	4.9	4 S	..... Western Quebec
	06	4.5	2 S	..... Western and central Quebec
	07	4.3	2 S	..... Southwestern Quebec, eastern Ontario
Kejimikujik	05	4.9	25 R	..... New England, New York, Pennsylvania, New Jersey

R = rain (mm), S = snow (cm), M = mixed rain and snow (mm)

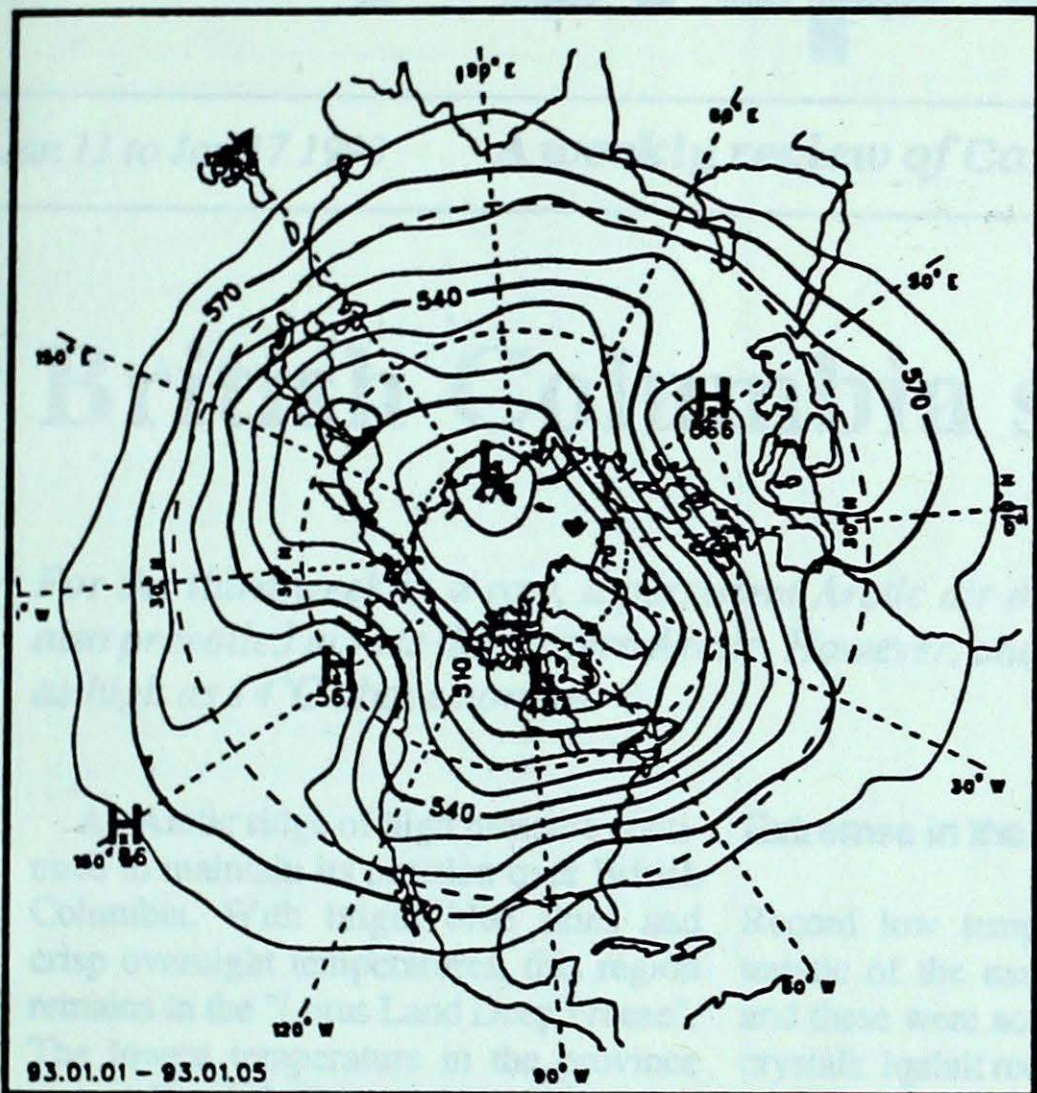
STATION	temperature				precip.		wind max		STATION	temperature				precip.		wind max	
	mean	anom	max	min	ptot	st	dir	vel		mean	anom	max	min	ptot	st	dir	vel
British Columbia								Ontario									
Blue River A	-20	-3	-2	-32	0	***		X	Gore Bay A	-9	1	4	-20	18	20	240	52
Cape St James	***	***	***	***	***	***		X	Kapuskasing A	-21	-2	0	-38	3	72		X
Cranbrook A	-14P	-1P	-9P	-28P	6P	37		X	Kenora A	-24	-5	-15	-33	1	39		X
Fort Nelson A	-18	7	-6	-29	13	42		X	London A	-1P	5P	11P	-9P	57P	4	070	48
Fort St John A	-20	-1	-11	-30	0	***	240	44	Moosonee	-23	-2	-5	-35	2	37	230	44
Kamloops A	-19	-12	-8	-28	4	28	260	41	North Bay A	-11	3	6	-23	16	13	050	50
Penticton A	-11	-8	-4	-16	1	13	320	41	Ottawa Int'l A	-7	5	8	-20	36	8	330	43
Port Hardy A	-2	-4	5	-8	2	***	100	44	Petawawa A	-10	4	4	-27	32	13	350	59
Prince George A	-24	-10	-8	-34	0	35	030	41	Pickle Lake	-25	-2	-16	-36	1	28	230	35
Prince Rupert A	-5	-3	2	-12	1	7		X	Red Lake A	-26	-4	-14	-38	1	59	250	32
Smithers A	-23	-11	-11	-31	0	***		X	Sudbury A	-13	1	3	-26	16	33	010	43
Vancouver Int'l A	-5	-7	3	-14	3	19		X	Thunder Bay A	-21	-5	-4	-34	1	49	290	44
Victoria Int'l A	-1	-4	4	-7	1	4	060	61	Timmins A	-19	-1	0	-38	5	74	270	37
Williams Lake A	-22	-9	-11	-33	8	77	310	41	Toronto(Pearson Int'l A)	-2	5	12	-13	31	3	220	61
Yukon Territory								Quebec									
Komakuk Beach A	-10	13	2	-20	6	23		X	Bagotville A	-16	0	1	-36	36	35	260	32
Teslin (aut)	-24	***	-15	-34	0	***		X	Blanc Sablon A	-18	***	-4	-31	12	28	260	72
Watson Lake A	-25	2	-11	-37	4	47		X	Inukjuak A	-25	-1	-13	-33	3	17		X
Whitehorse A	-19	4	-5	-33	2	22	180	52	Kuujuuaq A	-26	-3	-9	-34	6	28	260	63
Northwest Territories								New Brunswick									
Alert	-37P	-5P	-31P	-41P	0P	***		X	Fredericton A	-6	4	12	-22	17	3	260	43
Baker Lake A	-29	3	-11	-41	6	73	320	78	Miscou Island (aut)	-10	-1	1	-27	10	***		
Cambridge Bay A	-31	1	-12	-40	2	47	310	56	Moncton A	-7	2	11	-23	35	6	360	63
Cape Dyer A	-32P	-10P	-21P	-43P	1P	96		X	Saint John A	-5	3	93	-21	49	***	210	61
Clyde A	-30	-4	-24	-39	4	48	310	61	Nova Scotia								
Coppermine A	-21	4	-5	-34	8	75	230	69	Greenwood A	-2	3	15	-17	29	3	270	87
Coral Harbour A	-32	-3	-21	-42	3	20	320	61	Shearwater A	-3	2	10	-15	14	3	210	78
Eureka	-43P	-7P	-36P	-47P	1P	13		X	Sydney A	-4	1	10	-16	24	7	220	70
Fort Smith A	-25	2	-11	-39	1	28	310	39	Yarmouth A	-1	2	11	-13	13	***	220	83
Hall Beach A	-33	-3	-20	-43	3	46	300	43	Prince Edward Island								
Inuvik A	-12	18	3	-26	12	61	200	37	Charlottetown A	-6	2	9	-19	34	14	360	52
Iqaluit A	-32	-6	-16	-42	3	24	290	32	East Point (auto)	-3P	***P	7P	-16P	13P	***		
Mould Bay A	-32	1	-22	-39	1	22		X	Newfoundland								
Norman Wells A	-18	11	-7	-30	17	36		X	Cartwright	-19	-6	-6	-28	1	60	200	63
Resolute A	-35	-4	-25	-43	1	16	110	48	Churchill Falls A	-25	-2	-9	-36	2	58	240	52
Yellowknife A	-25	4	-9	-39	1	19		X	Gander Int'l A	-9	-4	2	-22	32	39	200	67
Alberta								93/01/04-93/01/10									
Calgary Int'l A	-21	-8	-7	-33	4	12		X	Goose A	-20	-3	-7	-30	0	11	260	56
Cold Lake A	-25	-5	-13	-39	1	24		X	St John's A	-5	-1	11	-17	24	8	250	107
Edmonton Namao A	-19	-2	-7	-29	2	22	180	44	St Lawrence	-3	1	8	-15	19	7		X
Fort McMurray A	-24	-1	-12	-34	2	24	250	41	Wabush Lake A	-25	-2	-8	-35	3	43	240	63
High Level A	-24	2	-16	-34	0	11		X									
Jasper	***	***	-8	***	***	12		X									
Lethbridge A	-20	-9	-6	-33	5	17	270	48									
Medicine Hat A	-22	-9	-8	-33	5	13	230	48									
Peace River A	-23	-1	-9	-32	0	21	270	33									
Saskatchewan																	
Cree Lake	-26	1	-17	-36	0	23	240	44									
Estevan A	-24	-7	-14	-37	2	12	110	50									
La Ronge A	-26	0	-17	-36	1	36	270	41									
Regina A	-25	-6	-14	-39	1	17	240	44									
Saskatoon A	-27	-7	-14	-38	2	22	220	32									
Swift Current A	-22	-7	-14	-38	2	17	260	48									
Yorkton A	-27	-7	-15	-38	1	32	230	37									
Manitoba																	
Brandon A	-28	-8	-15	-41	2	29		X									
Churchill A	-27	1	-7	-37	2	13	300	70									
Lynn Lake A	-26	1	-15	-38	1	31	230	46									
The Pas A	-26	-3	-14	-36	1	21	260	37									
Thompson A	-29	-1	-16	-44	1	22	230	52									
Winnipeg Int'l A	-26	-7	-17	-35	1	38	230	33									

mean = mean weekly temperature, °C
 max = maximum weekly temperature, °C
 min = minimum weekly temperature, °C
 anom = mean temperature anomaly, °C

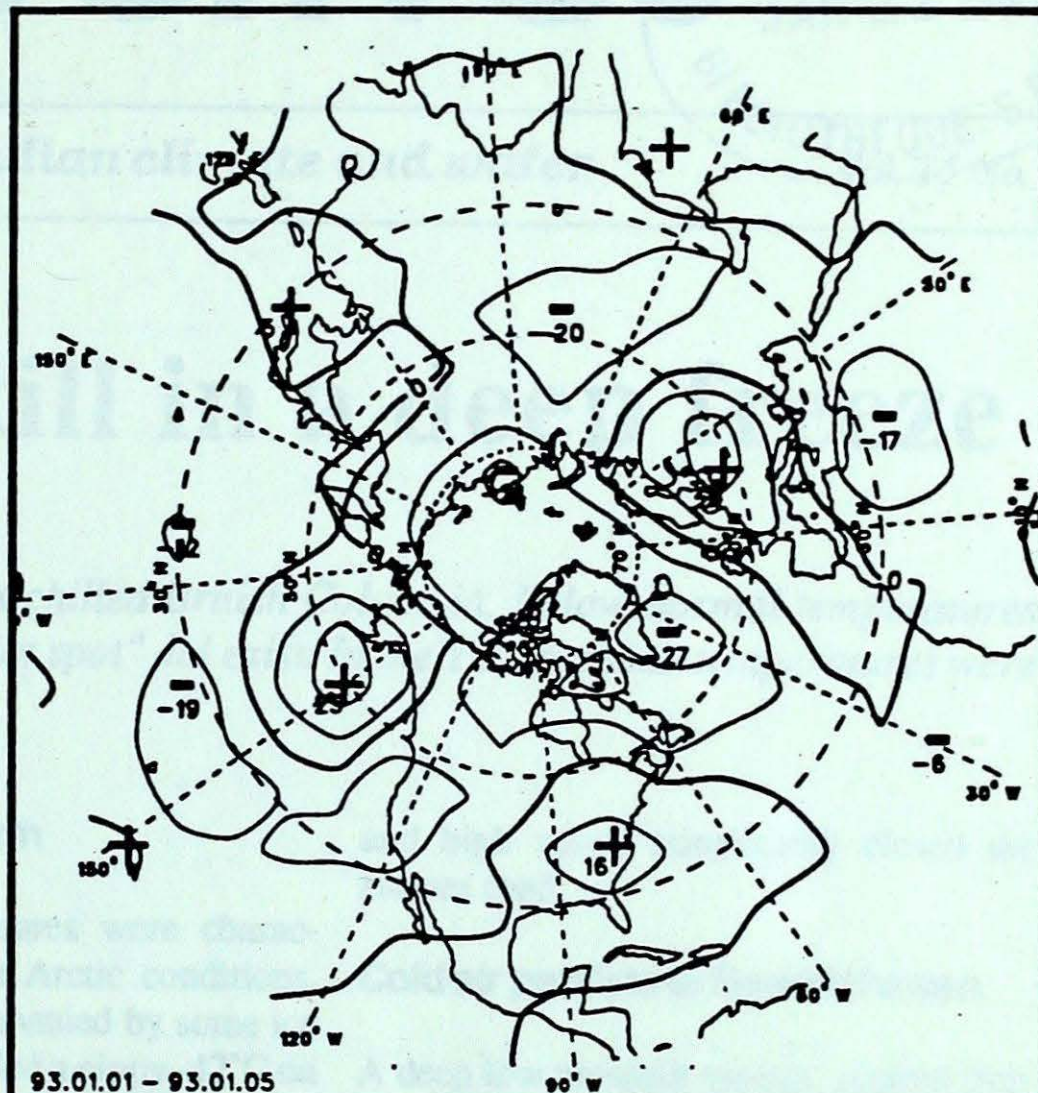
ptot = weekly precipitation total in mm
 st = snow thickness on the ground in cm
 dir = direction of max wind, deg. from north.
 vel = wind speed in km/h

— Annotations —
 X = no observation
 P = less than 7 days of data
 * = missing data when going to printing.

50-kPa ATMOSPHERIC CIRCULATION



Mean geopotential height
50-kPa level (10 decametre intervals)



Mean geopotential height anomaly
50-kPa level (10 decametre intervals)

